ANALYSIS AND MODIFICATION OF UNPROGRAMMED REINFORCEMENT CONTINGENCIES IN A HOSPITAL FOR THE DEVELOPMENTALLY DISABLED

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Daniel Ward Scott

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by

Daniel Ward Scott

Approved by Committee:

W Scott Ward
Chairman

Margaret E. Lloyd

Jerry R. Carter

Earle T. Campbell
Dean of the School of Graduate Studies

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An Abstract of a thesis by
Daniel Ward Scott
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Drake University
Advisor: W. Scott Wood

The problem: To design a reliable observation system for the monitoring of hospital attendants' on-ward interactions with hospital residents and to increase the rate of positive consequences delivered by the attendants for appropriate resident behaviors.

Procedure: An on-ward interaction recording system was developed and tested for reliability by comparing observation data with data obtained by trained independent observers. Following baseline observations, six hospital attendants were instructed to record their delivery of positive consequences to residents. If an attendant's rate of delivery of positive consequences increased during this self-monitoring condition, that attendant was subsequently returned to baseline observation conditions as a reversal procedure. If an attendant's rate of delivery of positive consequences had not increased during self-monitoring, that attendant was then given feedback and praised for increases in the rate of delivery of positive consequences delivered. All attendants in the self-monitoring-plus-praise condition were then returned to baseline conditions as a reversal procedure.

Findings: Results showed an inter-observer agreement of 80% for the on-ward observation system. Five of the six attendants increased their rates of delivery of positive consequences for appropriate resident behaviors when the attendants recorded their delivery of these positive consequences. The other attendant increased her rate when feedback and praise were added. Two of the five self-monitored attendants further increased their rates of positive consequences delivered when feedback and praise were added. Three of the six attendants increased their rates of successful attempts to change resident behaviors which paralleled their changes in positive consequences delivered.

Conclusion: It was concluded that a reliable system for monitoring on-ward interactions between attendants and residents can be developed and that self-monitoring procedures can be used effectively with attendants to increase

the rates of positive consequences delivered to residents for appropriate behavior.

Recommendations: Further research would include the self-monitoring of other interaction behaviors specified in the current interaction analysis system. Longer periods of implementation may increase the effects of the self-monitoring procedure. More extensive training and feedback might increase inter-observer agreement with the interaction analysis system.

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CHAPTER I

INTRODUCTION

Many research studies and case reports have demonstrated that inappropriate or abnormal behavior can be effectively modified in the hospital ward situation by using contingency management procedures (e.g., Bandura, 1969; Krasner & Ullmann, 1965; Ullmann & Krasner, 1965; Ulrich, Stachnik, & Mabry, 1966). The greatest therapeutic benefit from such an environment would be derived from maintaining a comprehensive and consistent contingency management program. However, recent studies have shown that most hospital wards do not maintain the required consistency. Gelfand, Gelfand, and Dobson (1967) found that the appropriate behavior of patients on a psychiatric ward was followed by positive attention from the ward staff only 61% of the time. Thus, appropriate behavior was ignored or punished 39% of the time. Gelfand et al. (1967) also found that inappropriate behavior was followed by positive attention 26% of the time.

Beuhler, Patterson, and Furniss (1966) discovered that the staff of a juvenile corrections institution intermittently reinforced inappropriate ("delinquent") behaviors with attention and praise. To further substantiate the point made above, Rosenhan (1973) in a study of psychiatric hospitals found that ward attendants spent only 11% of their time outside the ward office. In the same article, Rosenhan also reported that "nondisturbed" pseudo-patients who requested

treatment-related information from the staff (e.g., "When will I be eligible for grounds privileges?") received a verbal response only 3% of the time. For 88% of these requests, not even eye contact was given by the staff member.

One method of implementing a contingency management program in the hospital situation has been to teach procedures and principles of behavior modification as applied to specific behaviors such as toileting, dressing, and feeding. Demonstration projects designed to modify one behavior of one resident are often assigned to individual staff members. Delivery of specific consequences by ward staff for specific patient behaviors in this situation apparently can be effectively shaped, monitored and maintained without extreme difficulty (Watson, Gardner, & Sanders, 1971; Watson, 1972).

The generalization of these reinforcement procedures, however, to resident behaviors other than those modified in such projects either has not been achieved or has not been demonstrably substantiated. Perhaps an effective method for developing a more comprehensive contingency management program (or an important supplement to the individual project approach) would be to directly modify all routine staff social interactions with residents.

A few attempts have been made to monitor and modify routine ward staff behavior. Gardner and Giampa (1971) developed an attendant behavior checklist to evaluate

attendant behaviors throughout their work day. This procedure involved recording the amount of time attendants spent in general classes of behavior such as training, supervising, housekeeping, recording and writing memoranda. However, no evaluation of the effectiveness of staff interactions with residents was offered. A checklist for evaluating staff behavior in a specific behavior modification project was developed by Gardner, Brust, and Watson (1970), but no direct application to situations outside the individualized behavior modification project was suggested.

It appeared therefore, that no satisfactory functional analysis of regular staff interactions with residents outside the individualized behavior modification project was presently available. Any such analysis should follow four fundamental steps: (1) specifying the behaviors currently being emitted by ward staff during their routine interactions with the residents, (2) monitoring the effect of these behaviors on resident behavior, (3) initiating a contingency management program designed to modify one of the ward staff behaviors while continuing the monitoring, and (4) evaluating the results of the contingency management program. One goal of the present study was to develop just such a functional analysis system which would be applicable to all situations in which residents and staff interacted. This analysis would provide the information necessary for the first two steps in the modification of these interactions.

The third major step in modifying the staff-patient interactions would be to initiate the contingency management program. This program would include providing positive consequences for those staff interactions which would seem to be most functional in shaping and maintaining the appropriate behaviors of the residents. Specifically, this would involve providing positive consequences for ward staff when they provided positive consequences for appropriate responses of the ward residents.

This strategy of reinforcing the reinforcing agents has been attempted in other situations. Performance-related feedback and social reinforcement for ward attendants were found to be effective procedures for increasing the rate of completion of individualized behavior modification projects (Panyan, Boozer, & Morris, 1970; Welsch, Ludwig, Radiker, & Krapfl, 1973) and for decreasing staff absenteeism and tardiness (Gardner, 1970). In nonhospital settings performance-related feedback also increased the rate of positive interactions of teachers with their students (Cooper, Thompson, & Baer, 1970; Cossairt, Hall, & Hopkins, 1973) and of parents with their children (Herbert & Baer, 1972). Friteres (1971)[1]

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[1]J. Friteres. "Feedback to child development workers as a means of increasing play activities and social reinforcement of residents." Unpublished manuscript completed in partial fulfillment of Woodward State Hospital-School behavior modification course, 1971.

used a group contingency based upon a point system for increasing the amount of time attendants spent working with residents in play activities. Patterson, Cooke, and Liberman (1972) used a weekly newsletter on patient progress for a feedback procedure.

Katz, Johnson, and Gelfand (1972) found that instructing ward attendants to reinforce residents' task-oriented behaviors or behaviors incompatible with targeted inappropriate behaviors had no effect on the rate of the staff's reinforcing behaviors; nor did giving verbal prompts to the staff effect a significant change. Only the introduction of a monetary incentive was found to be successful. Despite this reported effectiveness of money as a reinforcer for ward staff behavior, the use of financial reward is probably not a currently feasible reinforcer in light of increasing costs, decreasing revenues, or labor policies of most institutions.

One behavior modification procedure which has received considerable research attention recently is self-monitoring (Bandura & Perloff, 1967; Mahoney, 1972). In self-monitoring the individual observes his own behavior and provides his own performance-related feedback. This strategy has been shown to be effective in modifying smoking behavior (McFall, 1970), student classroom behavior (Broden, Hall, & Mitts, 1971; McCardell, 1972), and various adolescent problems (Duncan, 1969). However, no reports of the use of self-monitoring to modify ward staff behaviors have been found.

The current investigation, therefore, first attempted to develop a functional analysis system for monitoring ward staff interactions with hospital residents. A specific staff behavior (providing a positive consequence for a resident's behavior) was then modified using a self-monitoring procedure and subsequent social reinforcement. The resulting effects on the analysis system were then analyzed to determine the utility of the system in monitoring patient-staff interactions.

CHAPTER II

METHOD

Setting

The study was conducted with the staff of two wards at the Woodward State Hospital-School in Woodward, Iowa. The residents of these two wards had been diagnosed as "autistic" and/or "retarded" and were between the ages of 9 and 14 years. Eight of the 20 boys and girls on Ward 1 were blind and four were unable to walk without braces or a walker. The 20 Ward 2 residents were boys with no visual or physical handicaps. None of the residents on these two wards toileted independently.

Observations were made on the wards between the hours of 9:00 and 11:00 a.m. and 2:00 and 4:00 p.m. These time periods specifically excluded meals, bathing, and dressing (except for cleaning of toilet accidents). Activities during these time periods usually included supervised and unsupervised play and scheduled toileting for the residents. The typical number of residents present during these time periods ranged from six to twelve residents per ward. Usually, some residents were absent during these time periods for off-ward behavior modification projects or other special training sessions. Thus, the specific population of the two wards during each observation period was not identical across observation periods. Observations were made of attendant interactions which were not specifically programmed as

part of a formal individualized behavior modification project.

Subjects

Six female ward attendants were selected as subjects for the study. Criteria for selection of attendants for the study were: (1) each must have been present on the ward dayroom for at least 20 minutes during the scheduled observation periods as determined by pre-baseline observations; (2) each must have been identified by her supervisor as being likely to remain employed on the ward for the expected duration of the study; (3) each must have given individual consent to be observed.

All six attendants were high school graduates who ranged in age from 19 to 64 years (median age was 29 years). Four attendants had been full-time employees of Woodward State Hospital-School for less than one year prior to the initiation of the study; two attendants (MK, RM) had been employed for five and six years respectively. These two attendants had also been trained in behavior modification project techniques six to eight months prior to the initiation of the study.

Recording

The behavior coding system was adapted from Kopp (1973)[2]. Attendant interactions with residents were

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[2] J. Kopp. Personal communication, Drake University, Des Moines, Iowa, 1973.

categorized into attempts to either increase (start, continue, prolong) or decrease (stop, slow, shorten) a particular resident behavior by either verbal or physical means (see Appendix A). These attempts were also coded as successful if the resident's behavior appeared to change in the direction intended by the attendant (this was judged by each observer). Attendant interactions were also recorded if they occurred as specifically delivered consequences for a particular resident response or behavior change. These consequences were classified as either positive (shows approval) or negative (shows disapproval).

Prior to the initiation of baseline observations, the experimenter and four reliability observers (three In-Service Training personnel from Woodward State Hospital-School and a Drake University graduate student) were trained in behavior coding procedures using video tapes of on-going staff interactions with residents on a ward similar to the wards selected for the study. Recorders reached 85% agreement across reliability measures before initiation of baseline. The trained reliability observers made intermittent reliability checks throughout the study.

During each reliability check, both the experimenter and the reliability observer recorded one attendant's interactions with any and all residents for ten minutes. Both the experimenter and the reliability observer were seated along the walls of the ward dayroom. Interactions of the

selected attendants with residents were recorded as they occurred. If an attendant left the ward dayroom before the ten minutes of observation time had elapsed, all recording was stopped until that attendant returned. After observing a given attendant for the specified interval, the experimenter then observed another attendant until all selected attendants had been observed. Each attendant was observed once during each day that she was on duty on the ward.

Agreement between the experimenter and the reliability observers during training was computed from the frequencies of the eight categories of interactions recorded by the two observers during the ten-minute sample. For each interaction category the smaller frequency recorded was divided by the larger frequency recorded and converted to a percent. Agreement scores were computed separately for the four increase/decrease categories (vi, pi, vd, pd), for the successful and unsuccessful categories, and for the positive and negative consequence categories. The overall agreement measure used during training computed by averaging the eight agreement scores.

Baseline

Baseline observations were initiated with a reliability observer making intermittent reliability checks as described above. Ward attendants had previously been informed that recorders would be observing the interactions between residents and staff. Baseline was continued for each attendant until

80% agreement among observers was obtained and visual stability in the percentage of positive consequences was observed. Stability was assessed by visual inspection made by the experimenter and his research advisor.

Stability Assessment

Visual inspection is a comparison technique which requires that the researcher successfully identify and manipulate independent variables to produce major visual changes in behavior. According to Sidman (1960) visual inspection for stability is appropriate when "exploring for relevant variables" in behavioral research. Since the purpose of any stability assessment in behavior analysis is to provide a criterion for replication, a visual comparison by an experienced observer can be more efficacious in terms of man-hours and validity than traditional statistical methods.

Self-Monitoring Phase

After an attendant's percentage of positive consequences had stabilized or made no major increase, that attendant was started on the self-monitoring phase. During the self-monitoring phase each attendant counted the number of positive consequences for resident behavior which she delivered during the ten-minute period in which she was observed. Before the initial session, each attendant was given the following message by the experimenter:

> "As you know I have been observing your interactions with the residents over the past few weeks. However, I've been having some difficulty

> in recording one particular type of interaction, and I would like to have you help me. Your supervisor has already approved of your helping me.
>
> I've been having difficulties recording what I have called 'positive consequences for resident behavior'. Positive consequences are those interactions you have with a resident which signify that you approve of what he is or is not doing or has or has not done. These consequences can be something you say, such as praise, or something you do physically, such as a pat on the head or a tickle.
>
> I've had some other people help me count (you've probably noticed them), but we don't agree very well. What I would like you to do is help me count these positive consequences for ten minutes. All I'd like you to do is wear this wrist counter for the next ten to fifteen minutes while you're working with the residents in the dayroom and push the counter plunger each time you give a positive consequence to a resident. Will you help me?"

Any questions from the subject were then answered and the use and wearing of the wrist counter demonstrated. The experimenter then sat down and signalled the subject when to start counting. At the end of the ten-minute observation period the experimenter approached the subject and asked how many positive consequences she had counted. Close agreement to the experimenter's count was enthusiastically praised with the following message:

> "Wow. I counted ____. That's exactly/very close to what I counted. That's fantastic!" A discrepant count was responded to with, "I counted ____. Were you counting both things you said, like praise, and things you did physically, like pats or tickles? Well, hopefully we will be closer next time."

Each subject was asked each day just prior to the

observation session to record her behavior. Subjects were given no further indication that they would be counting on any days after the just-completed observation session.

The observation of attendant RM was particularly difficult throughout the course of the study. Because of her ward duties as an acting supervisor, RM spent very little time on the wards interacting with the residents. Prior to her sixth observation session (Point "A" on Figure 4), the experimenter met with RM to schedule her observation periods. An increase in the rate of positive consequences delivered was observed after this meeting. After her percentage of positive consequences had stabilized again, RM was started on the self-monitoring phase. Also because of her unavailability, RM was stopped in the self-monitoring condition before desirable stability had been achieved so that one baseline condition probe could be made before the study was ended.

Self-Monitoring-plus-Praise Phase

Three attendants were introduced to an experimental condition which was intended to further increase their percentages of positive consequences delivered to residents. The other two attendants continued in the self-monitoring phase. The self-monitoring-plus-praise phase was initiated for an attendant only after an increase had been recorded over the previous observation session in the number of positive consequences she delivered. After the first session in which

the attendant had shown an increase (based on the experimenter's count) over the previous session, the experimenter introduced the new experimental condition with the following message:

> "How many did you count? I counted ____. That's exactly/very close to what I counted and that's ____ more than you did last time. Fantastic! By the way, I have been keeping a graph of your counts over the past several days that you've been counting for me. Would you like to see it? (Show graph) As you can see on the graph you jumped from ____ last time to ____ today. That's ____ more than last time. That's great!"

After the initial session for an attendant in this phase, that attendant was approached after each observation session in the following manner: "How many did you count today? I counted ____. That's really/not very close. Let's see how that compares with last time. (Show graph) Last time you did ____ and today you did ____." If the attendant showed an increase over the previous session, the experimenter gave this message: "Hey, that's ____ more than last time. Fantastic!" If the attendant recorded no increase or a decrease from the previous session, the experimenter gave this message: "Last time you did ____. Thank you for helping me count."

Reversal Phase

After each attendant's percentage of positive consequences had stabilized under her final modification phase (either self-monitoring or self-monitoring-plus-praise) or shown no major increase each attendant was then observed

again under baseline conditions. Each attendant was observed without the request for her to count her interactions during this phase.

CHAPTER III

RESULTS

Reliability

A different reliability measure from the one calculated during observer training was used because of the low frequencies recorded in some of the interaction categories. The averaging technique used during observer training was considered inappropriate for this study because it weighted low-frequency and high-frequency behaviors equally. The second reliability measure provided a more realistic assessment of inter-observer agreement throughout the study.

A total of 40 reliability checks were made by the four raters throughout the study. Each of the eight interaction codes was summed across all subjects, all raters, and all experimental phases. These totals were compared with the data recorded by the experimenter during the same sessions. For each interaction category the smaller frequency recorded was divided by the larger frequency recorded and converted to a percentage. Agreement on positive consequences delivered averaged 83% across all subjects, raters, and experimental phases. Average rater agreement on successful attempts to change behavior was 95% across all subjects and phases. An overall agreement measure, computed by averaging the eight agreement scores mentioned above, was 80% for the current study.

Rate of Positive Consequences

Figures 1-6 depict the frequencies of positive consequences and successful attempts to change behavior by each attendant during each experimental condition. All attendants except VW increased their rates of positive consequences delivered when subjected to the self-monitoring condition. In the self-monitoring-plus-praise condition these rates increased even more for attendants MG and MS and successfully increased the rate for attendant VW. During the reversal condition the rates of positive consequences delivered reversed to baseline levels for all attendants except VW and RG. For these two attendants only slight decreases toward baseline levels were recorded.

Attendant data for rate of positive consequences delivered was variable from session to session and exhibited overlap across experimental conditions. However, the self-monitoring condition did produce a median increase over baseline level of 200% for RG and MK and 50% for RM. The self-monitoring-plus-praise condition produced a median increase over baseline level of 200% for VW and MG and a 184% increase for MS.

Rate of Successful Attempts to Change Behavior

A large increase in the median frequency of successful attempts to change behavior was recorded for attendant MG (self-monitoring and self-monitoring-plus-praise phases) and this change reversed to baseline level. Small increases were

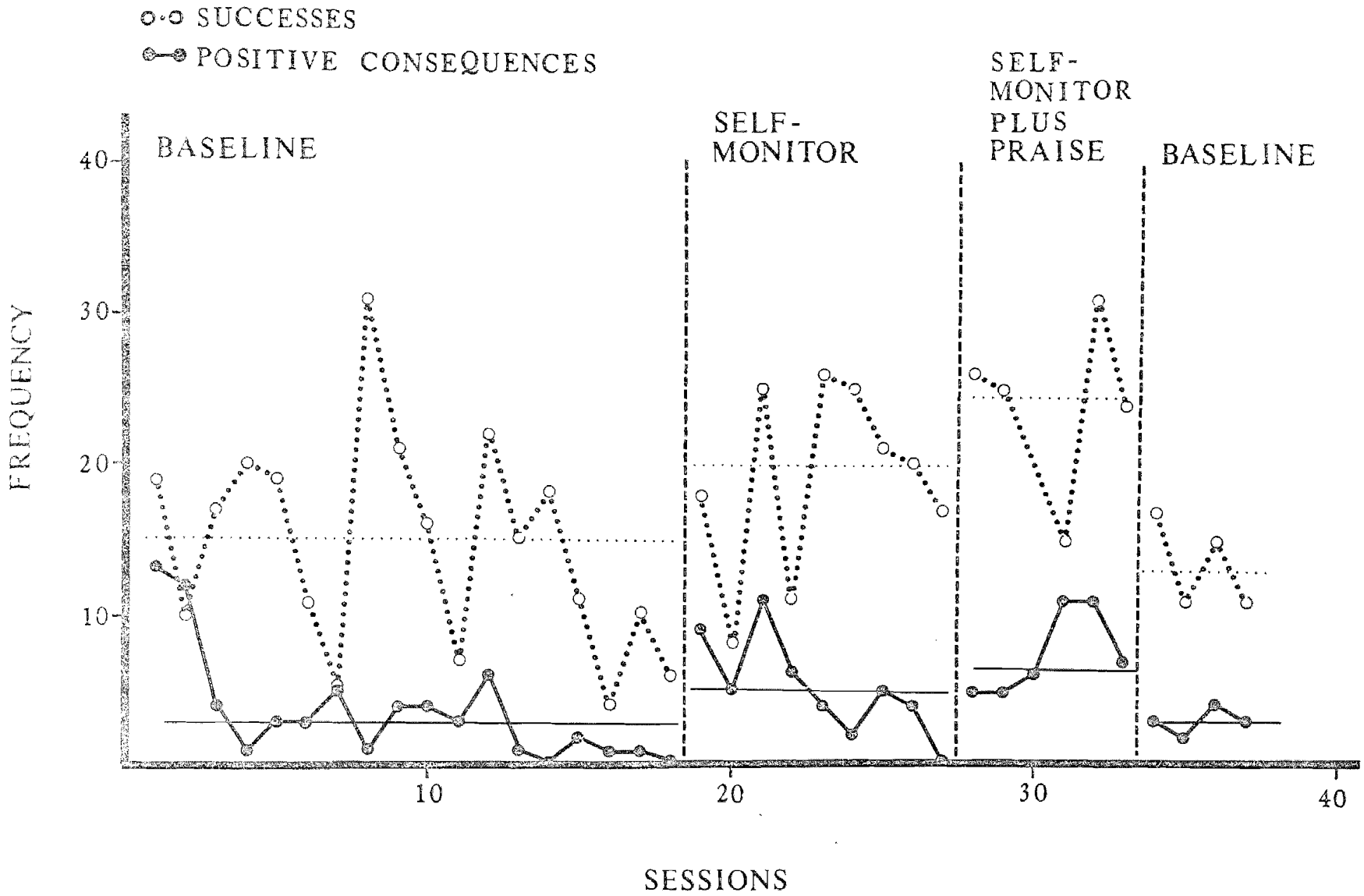

Fig. 1. Frequencies of positive consequences and successful attempts to change resident behavior by attendant MG in ten-minute sessions.

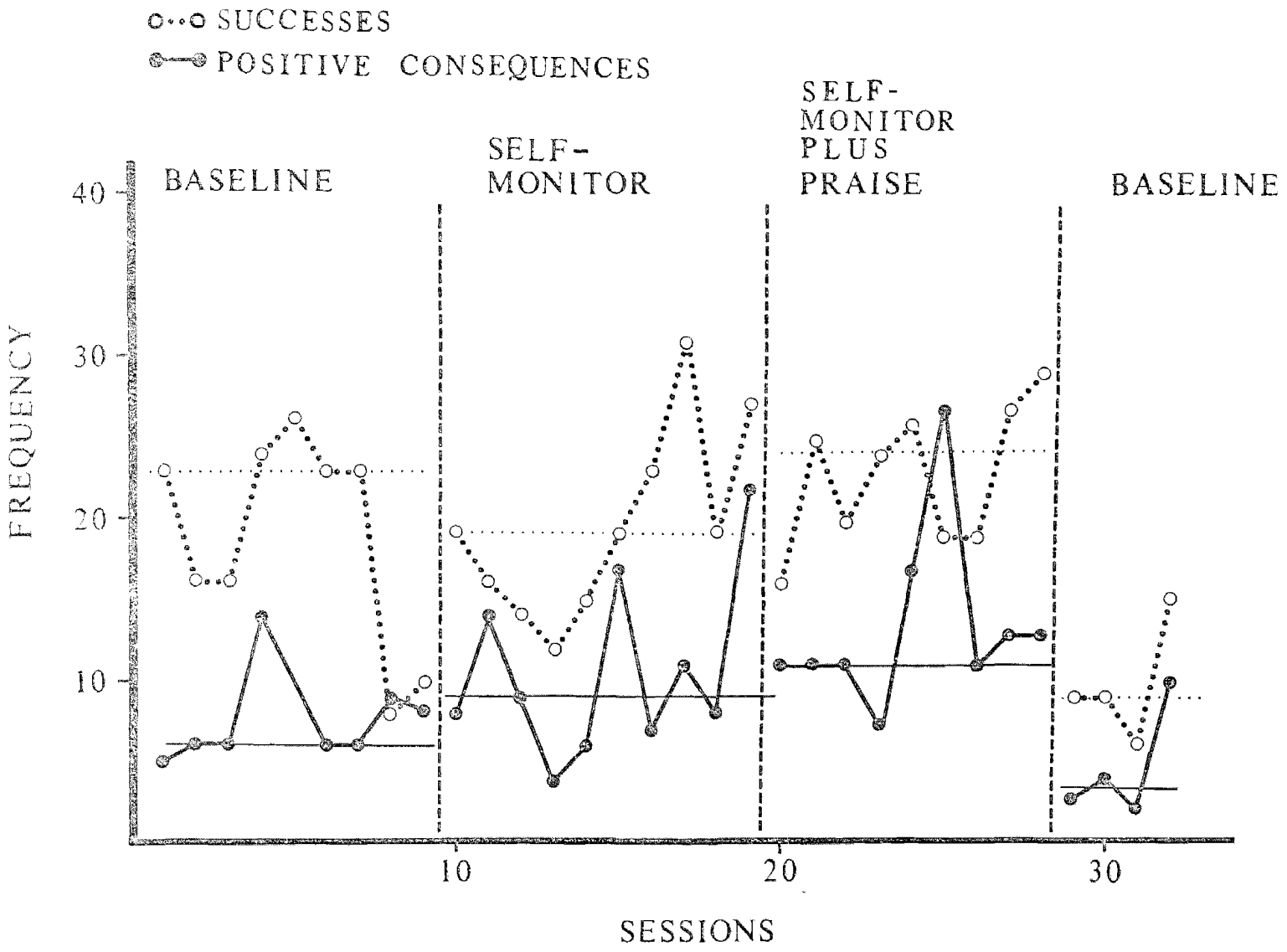

Fig. 2. Frequencies of positive consequences and successful attempts to change resident behavior by attendant MS in ten-minute sessions.

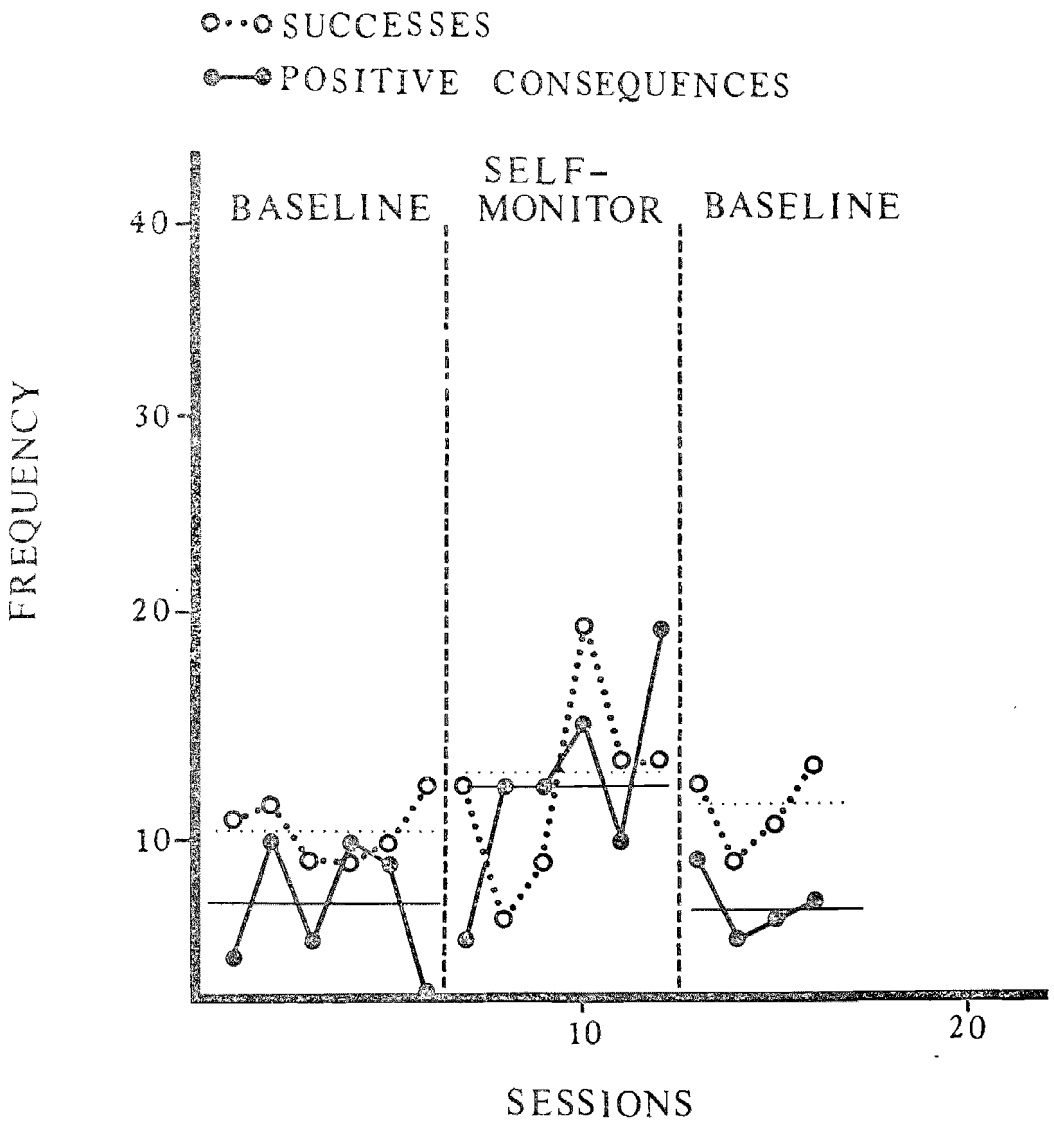

Fig. 3. Frequencies of positive consequences and successful attempts to change resident behavior by attendant MK in ten-minute sessions.

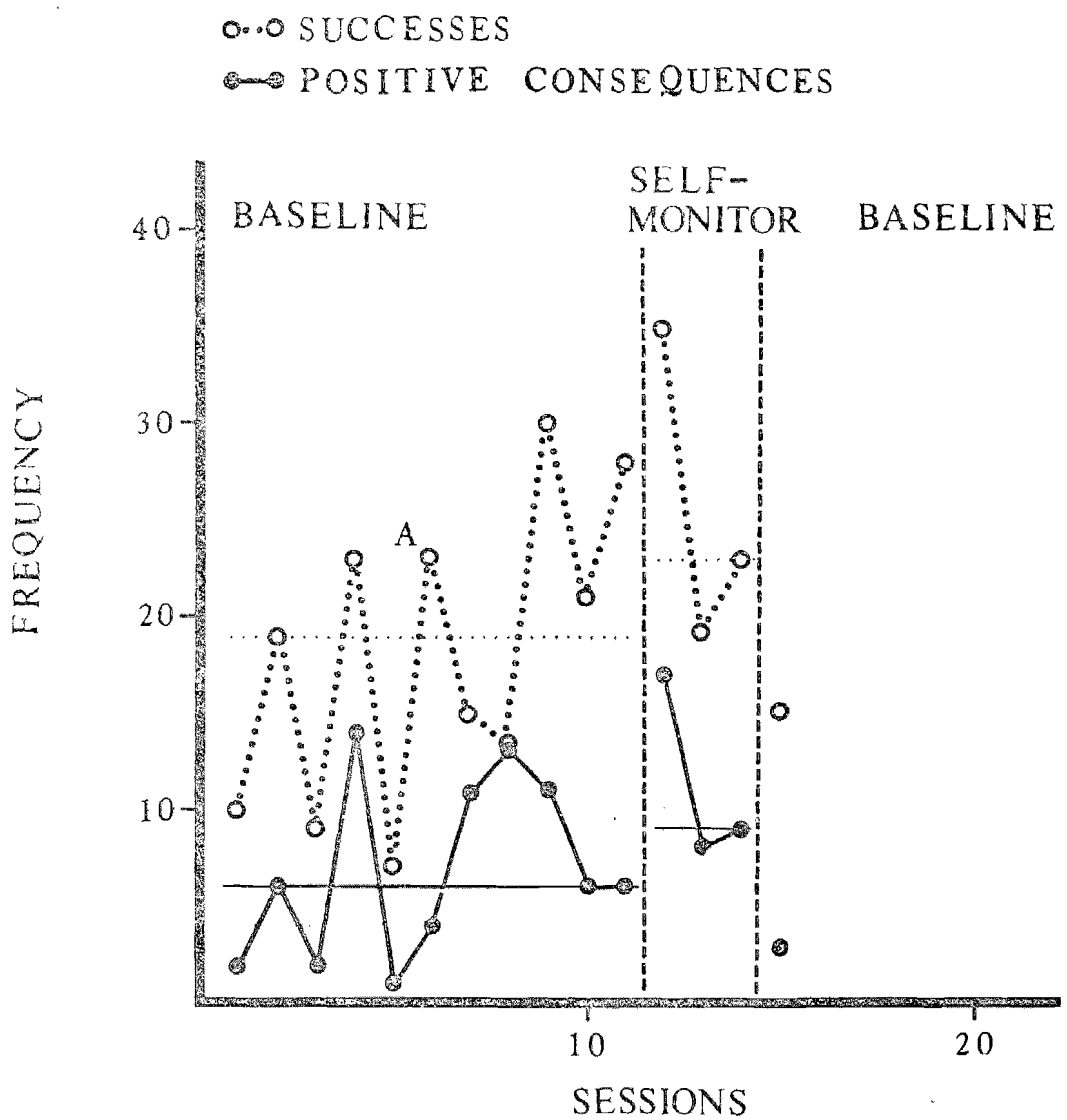

Fig. 4. Frequencies of positive consequences and successful attempts to change resident behavior by attendant RM in ten-minute sessions. Point "A" designates first session following observation scheduling meeting.

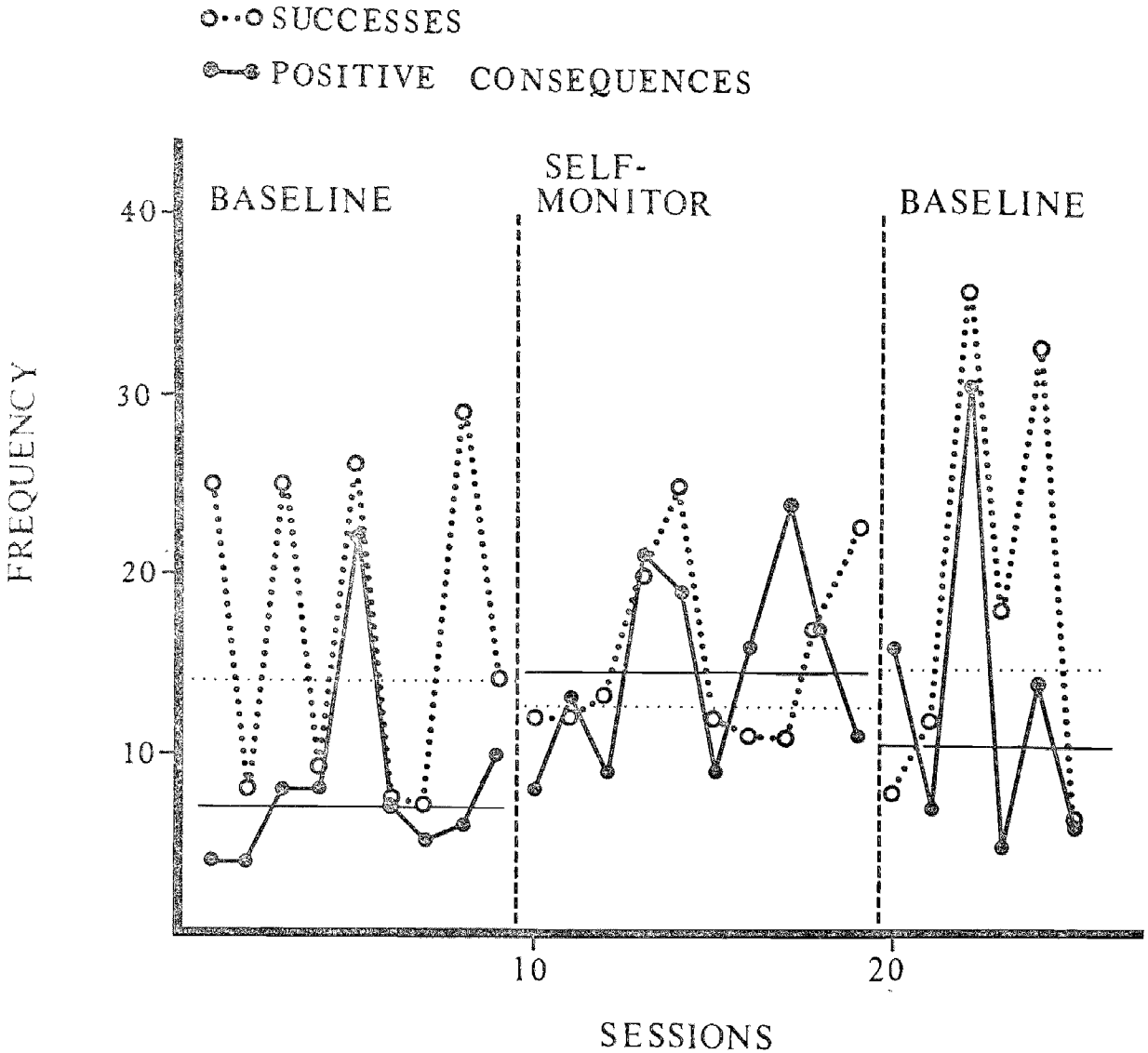

Fig. 5. Frequencies of positive consequences and successful attempts to change resident behavior by attendant RG in ten-minute sessions.

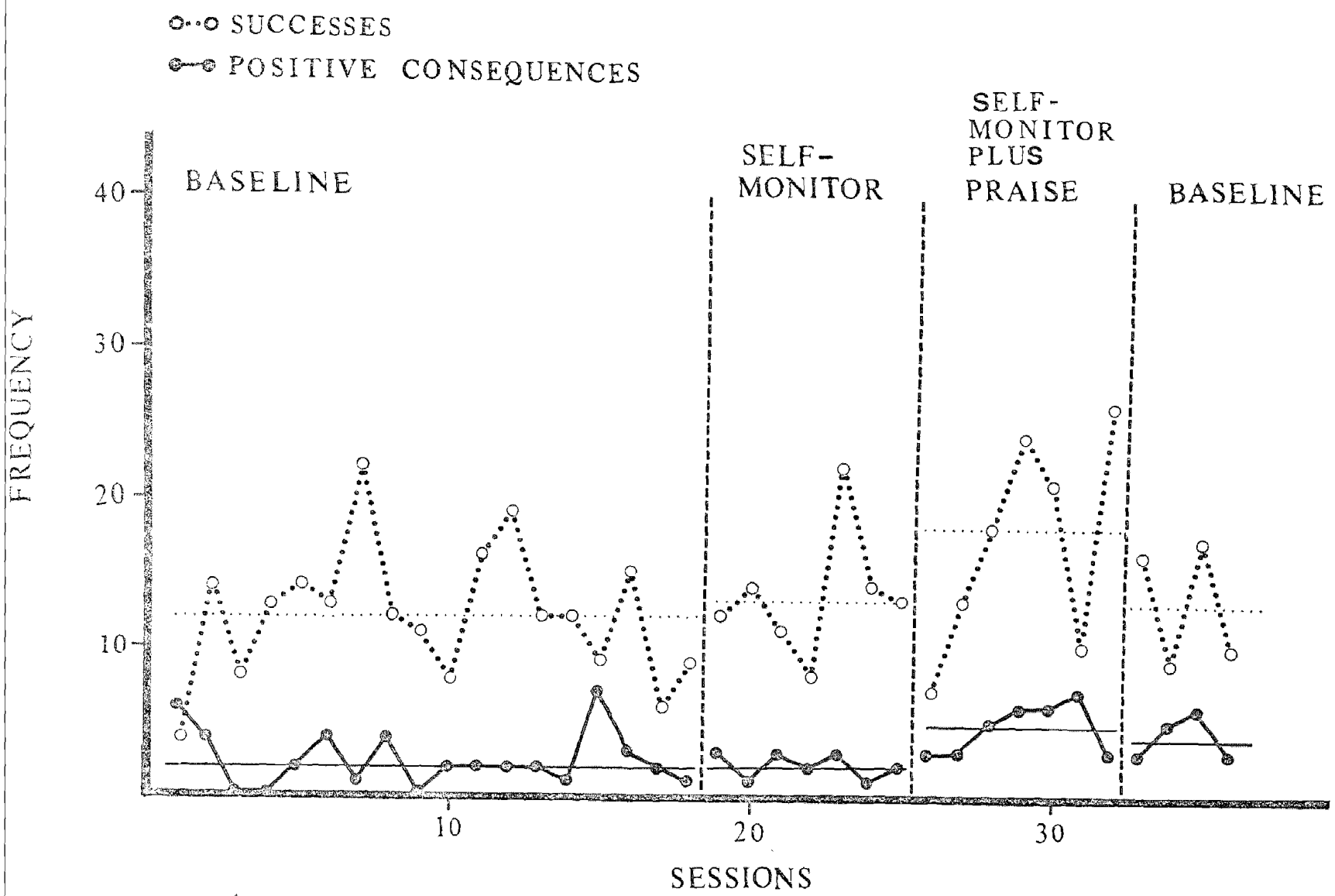

Fig. 6. Frequencies of positive consequences and successful attempts to change resident behavior by attendant VW in ten-minute sessions.

recorded for attendants RM (self-monitoring phase) and VW (self-monitoring-plus-praise phase) which also reversed to baseline levels. Attendants MK and RG recorded no significant changes under the self-monitoring condition. Attendant MS recorded a slight decrease under the self-monitoring condition which increased to baseline level under the self-monitoring-plus-praise condition and decreased sharply under the reversal condition.

Point "A" on Figure 4 for attendant RM indicates the first observation session which followed the scheduling meeting mentioned earlier. Median performance levels for these six sessions were eight positive consequences per session and 22 successful attempts to change behavior per session.

Percentage of Positive Consequences

The percentage of positive consequences was calculated by dividing the frequency of positive consequences observed by the sum of the positive and negative consequences observed. Large increases in the median percentages of positive consequences delivered were recorded for attendants MK and RM under the self-monitoring condition. This increase reversed to baseline level for attendant RM (based on a single probe), but remained at the modified level for attendant MK. Attendant VW nearly doubled the percentage of positive consequences delivered under the self-monitoring condition. However, no change under the self-monitoring-plus-praise condition was recorded and the self-monitoring effect did not reverse to

baseline level. No major changes were recorded for attendants RG, MS, and MG. For attendant MG a major increase over baseline level (median=100%) was observed during the reversal phase.

Percentage of Successful Attempts to Change Behavior

The percentage of successful attempts was calculated by dividing the frequency of successful attempts to change behavior by the sum of the successful and unsuccessful attempts to change behavior. Positive and negative consequences were not included in this computation. No major changes in median percentage of successful attempts to change resident behavior were observed in any experimental conditions for any attendants.

CHAPTER IV

DISCUSSION

It was found by using an individual subject design that ward attendants in an institution delivered more positive consequences for appropriate resident behaviors when the attendants recorded their delivery of these positive consequences. The data also suggests that social reinforcement may facilitate the increase due to self-monitoring in the rate of positive consequences delivered by ward staff. These findings indicate that self-monitoring can be effective in improving the performance of attendant staff in an institution. These findings further substantiate the Welsch, Ludwig, Radiker, and Krapfl (1973) finding that performance related feedback and social reinforcement for ward attendants are effective procedures for modifying attendant staff behaviors.

The functional analysis system developed in the current study showed indications of reliability and feasibility. Considering that recorders were engaged in "live" continuous recording, and that ten different interaction codes were used, the agreement figures reported (80%, 83%, 95%) were considered to be acceptable. Romanczyk, Kent, Diament, and O'Leary (1973) reported reliability estimates between 60% and 90% for an "overt identified assessor" of reliability such as those used in the current study.

Future research in the area of self-monitoring of attendant staff behavior should include a reliability

assessment system which would permit even greater agreement with independent observers, however. Perhaps the monitoring of only one or two behaviors (e.g. positive consequences delivered and successful attempts to change behavior) would afford greater agreement among observers. It would also be interesting to see if the rate of successful attempts to change resident behavior would be affected by self-monitoring. The answer to such a question would provide valuable data and strategies for the training and supervision of attendant staff in an institution. If direct monitoring and shaping of attendant staff would provide as much change in resident behavior as would the typical in-service training course, the specific objectives of in-service training programs could drastically change. The current study offers limited data in support of this contention.

One might have expected that an increase in the rate of positive consequences delivered to residents would also increase the rate of successful attempts to change resident behavior. The current investigation did not unquestionably demonstrate this contention. This could have been due to the limited period of time during which the reinforcement density was increased (ten minutes of an eight hour work shift) or due to the fact that several residents were involved. If the rate of attendant-delivered reinforcement to one particular resident had been increased, perhaps that attendant's rate of successful attempts to change that

resident's behavior would have increased more than was demonstrated in the current study.

Due to sick leave, vacations, special duties, and other events not under the control of the experimenter, experimental sessions for attendants did not occur on consecutive days. As a result, a two-month period was necessary to record the data reported in the current study. This intermittent application of the experimental conditions was certainly a large factor in the decreased effect of the contingencies used in this investigation.

It should also be noted that the contingency relationship between positive consequences and the attempts to change resident behavior was ignored. Presumably, if the rate of reinforcement had been increased for one particular behavior of a specific resident, the success rate of that attendant's attempts to prompt that behavior would have increased. It is interesting to note, however, that even with the limitations mentiond, it seems possible to increase the success rate of attendants in working with the residents. Even slight increases in the rate of reinforcement delivered by attendants apparently may effect slight changes in resident behavior.

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APPENDIX A

INTERACTION CATEGORIES

1. Attempt to INCREASE a behavior

Coded "i"; an attempt by the attendant to begin, continue, or otherwise increase the rate or duration of a behavior via a prompt, gesture, command, question, or stimulus object presentation; behavior mentioned by the attendant had not yet occurred or was to be repeated by resident; may be verbal or physical; may be successful or not successful; behavior verbalized by attendant was behavior to be coded.

Examples of "i":

a. "Come here."

b. "I want you to pick up the ball."

c. "Will you give me the block?"

d. "What color is this toy?"

e. "Where is your teddy bear?"

f. "Would you like to sit on my lap?"

g. "Since you hit that girl, go apologize to her."

h. "Sit back down."

i. A gesture to move in a particular direction.

2. Attempt to DECREASE a behavior

Coded as "d"; an attempt by the attendant to stop, decrease, or slow down the rate or duration

of a behavior which was already occurring, had just occurred (attendant was slow in delivering statement), or was about to occur (according to attendant); may be verbal or physical; may be successful or not successful; behavior verbalized by attendant was behavior to be coded.

Examples of "d":

a. "Don't hit him."

b. "I don't want you to cry like that."

c. "I want you to do less talking in class."

d. "I will give you some candy if you stop yelling."

e. "Slow down."

f. A gesture to stop, or a blocking of, a particular response.

g. Physically restraining a resident.

3. PHYSICAL attempts

Coded as "p"; attendant made direct or indirect (via a mediating object) contact with resident; no words spoken; included physical prompts; described an attempt to increase or decrease a resident's behavior; does not describe consequences.

Examples of "p":

a. Leading the resident by the hand.

b. Pushing or pulling a resident in a particular direction.

c. Grabbing a resident's arm to block a blow.

4. VERBAL attempts

Coded as "v"; a spoken or gestured attempt to increase or decrease a resident's behavior; included verbal prompts, gestures, commands, questions, and "if-then" statements; interactions which included both verbal and physical components were recorded as "vp" but were included with verbal interactions for data summation; does not describe consequences.

Examples of "v":

a. "Come here."

b. A gesture to move in a particular direction.

c. Any spoken interaction.

* A gesture was recorded (as "v") only if the resident observed it.

5. SUCCESSFUL attempt to change behavior

An interaction code (vi, pi, vd, pd) was circled if the attempt to increase or decrease the resident's behavior was successful. Criteria for success included at least one of the following:

a. The attendant was apparently satisfied that the attempt was successful, e.g. praise was given as a consequence, the same or a similar attempt to change the resident's behavior was not repeated.

b. The recorder observed that the behavior of the resident did change in the intended direction.

6. UNSUCCESSFUL attempt to change behavior

An unsuccessful interaction was noted by the absence of a circle around the interaction code. Criteria for an unsuccessful interaction included at least one of the following:

a. The attendant was apparently <u>not</u> satisfied that the attempt to increase or decrease the resident's behavior was successful, i.e. the same or a similar attempt to change the resident's behavior was repeated or a negative consequence was given.

b. The recorder observed that the behavior of the resident did not change in the intended direction.

7. POSITIVE Consequence

Coded as "+"; attendant showed approval of resident's behavior; may or may not follow an interaction code, i.e. a command may not have been given; did not apply to attempts to increase or decrease behavior; may be either verbal or physical, but not coded separately; included feedback for a correct response.

Examples of "+":

a. Praise.

b. "That is correct."

c. "I like the way you didn't hit Sally."

d. "Thank you."

e. A hug, pat, handwave, kiss, or smile directed toward the resident.

f. An edible reward, token or other back-up reinforcer.

* A gesture or facial expression was recorded only if the resident observed it.

8. NEGATIVE Consequence

Coded as "-"; attendant showed disapproval of resident's behavior; may or may not follow an interaction code, i.e. a command may not have been given; did not apply to attempts to increase or decrease behavior; may be either verbal or physical, but not coded separately; does not include "no consequence" for a resident behavior; includes feedback for an incorrect response.

Examples of "-":

a. "That was a bad thing you did."

b. "I don't like the way you did that."

c. "No, that is not correct."

d. Shaking a finger at a resident to indicate "NO".

e. Physical punishment of a response.

f. A frown or scowl directed at the resident.

* A gesture or facial expression was recorded only if the resident observed it.